



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/421,575	10/20/1999	ICHIRO KASAI	15162/00910	4346

24367 7590 10/01/2004

SIDLEY AUSTIN BROWN & WOOD LLP
717 NORTH HARWOOD
SUITE 3400
DALLAS, TX 75201

EXAMINER

CURTIS, CRAIG

ART UNIT PAPER NUMBER

2872

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/421,575	Applicant(s) KASAI, ICHIRO	
	Examiner Craig Curtis	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-7 is/are allowed.
- 6) ☐ Claim(s) 1 and 8-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Group Art Unit: 2872

DETAILED ACTION

Disposition of the Instant Application

- This Office Action is responsive to Applicant's Amendment filed on 26 August 2003, which has been made of record in the file.
- By this amendment, Applicant has amended independent claims 1 & 10.
- Claims 1-18 presently are pending in the instant application.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the structural features that make possible the following: *wherein the information displayed on the information display device is directed to the pupil as a **virtual** image* (as recited in independent claims 1 and 10, emphasis added) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the

Group Art Unit: 2872

remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. **This objection to the drawings will not be held in abeyance.**

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the Applicant regards as his invention.

2. Claims 1, 10, 17, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. More specifically, the meaning of the phrase "*wherein the information displayed on the information display device is directed to the pupil as a virtual image*" (recited in claims 1 and 10) cannot be ascertained by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace (5,355,224).

Group Art Unit: 2872

Wallace discloses the invention as claimed--a viewing optical system/optical apparatus a viewing optical system, said viewing optical system (Fig. 1A) comprising:

an objective system (13) for forming on an image surface an image of an object;

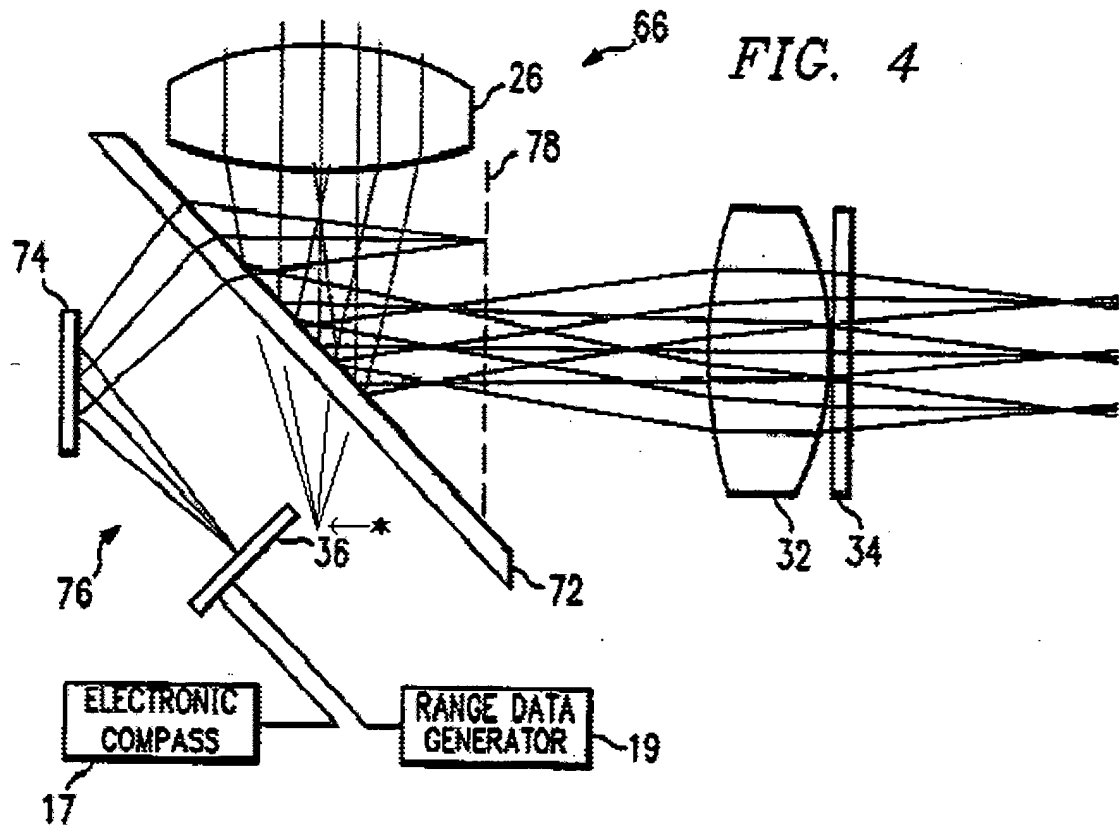
an eyepiece system (32) for enlarging and directing the image to a pupil;

a hologram combiner (Fig. 4, 72) comprising a reflective-type hologram (a reflective- *and* transmissive-type, or transflective-type, actually) and having an optical power for constructing an equivalent surface (78) which is optically equivalent to the image surface at a different position than the image surface as viewed from the pupil (See annotated Fig. 4 below: esp. <---*); and

an information display device (76) for displaying information on the equivalent surface--
EXCEPT FOR the additional teaching wherein the hologram combiner transmits light from the image and reflects light from the information display device so that the image can be viewed with the information overlaid thereon. It is noted, however, that Wallace does disclose wherein the hologram

combiner reflects light from the image and transmits light from the information display device so that the image can be viewed with the information overlaid thereon, wherein the information displayed on the information display device is directed to the pupil as a virtual image (not presently depicted in the drawings of the instant invention).

Group Art Unit: 2872



It would have been obvious to one having ordinary skill in the art at the time the invention was made to have assembled the system of Wallace such that the hologram combiner transmit light from the image and reflect light from the information display device so that the image could be viewed with the information overlaid thereon, such a geometry amounting to a straightforward rearrangement of existing parts, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). One would have been motivated to switch (read: rearrange) the relative positions of the information display device and light from the image (including, of course, lens 26), one to the other, for at least the purpose of, for the

Group Art Unit: 2872

sake of example, increasing the brightness of light from the information display device via reflection from said hologram combiner, as opposed to the brightness of same realizable via transmission through said hologram combiner.

4. Claims 8, 9, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace (5,355,224) in view of Swift (GB 2 123 974 A).

Wallace discloses the claimed invention as set forth above with respect to claims 1 and 10 **EXCEPT FOR** the additional explicit teachings wherein said viewing system is a reverse Galileo type optical system, which further comprises a relay lens for inverting the image.

Swift, however, teaches a viewing system of the reverse Galileo type (see abstract) and a relay lens (Fig. 1, lens 20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the viewing system of Wallace such that it be of the reverse Galileo type and have a relay lens, as taught by Swift, for at least the purpose of providing a wider field of view than would be possible in a system that wasn't reverse Galilean, as well as providing proper image parity via the provision of said relay lens.

Response to Arguments

5. Applicant's arguments filed 26 August 2003 have been fully considered but they are not persuasive. With regard to independent claims 1 and 10, Wallace can fairly be viewed as meeting Applicant's recitation in these claims of, in pertinent part, "...a hologram combiner comprising a reflective type hologram and having an optical power for constructing an equivalent surface which is optically equivalent to the image surface at a different position than the image surface as viewed from

Group Art Unit: 2872

the pupil.” That this is the case can be seen by reference to the annotated Fig. 4 of Wallace provided above. In this case, the equivalent surface is 78, and the image surface (virtual) is as depicted by (<---*) As clearly depicted in said annotated Fig. 4 of Wallace, equivalent surface 78 is both optically equivalent to the image surface (identified by <---*) and at a different position than the image surface as viewed from the pupil.

Applicant has respectfully traversed the rejection of claims 1 and 10 under 35 U.S.C. 103(a), as being unpatentable over Wallace (5,355,224), basing said traversal on the alleged non-teaching (by Wallace) wherein “the hologram combiner comprises a reflective type hologram and has an optical power for constructing an equivalent surface to an image surface, but at a different position than the image surface.” The examiner respectfully disagrees.

As is clearly set forth in Fig. 4 of the Wallace reference, the hologram combiner (72) is both reflective and transmissive (read: transfective): reflecting the light from the image and transmitting the light from the information display device (76). As is clearly set forth in the rejection of claims 1 and 10 above, one of ordinary skill in the viewing optical system art would certainly consider obvious the rearrangement of the relative positions of the information display device and light from the image (including, of course, lens 26), one to the other, for at least the purpose of, for the sake of example, increasing the brightness of light from the information display device via reflection from said hologram combiner, as opposed to the brightness of same realizable via transmission through said hologram combiner.

Applicant further traverses the rejection of claims 1 and 10 under 35 U.S.C. 103(a), as being unpatentable over Wallace (5,355,224), based on the alleged non-teaching by same of “a holographic

Group Art Unit: 2872

combiner...having an optical power for constructing an equivalent surface which is optically equivalent to the image surface at a different position than the image surface as viewed from the pupil.” The examiner respectfully disagrees with this assertion.

The hologram combiner (72) taught by Wallace not only has optical power (as can clearly be seen in Fig. 4, in which light diverging from folding mirror (74)--that is, light from said image display device--is made to converge following its transit through said hologram combiner, a result that could only be achieved if said hologram combiner had non-zero optical power); but focuses light from said information display device at plane 78, which is “optically equivalent” to the image surface at a different position than the image surface as viewed from the pupil in the same manner as that constructed by Applicant’s hologram combiner. (It is noted that the manner in which something can be described as being both “optically equivalent” and “at a different position than the image surface as viewed from the pupil” is met by Wallace by broadly interpreting “optically equivalent.”) In addition, as was noted in the previous Office action, Fig. 4 clearly depicts light from the information display device focussing at a different position (i.e., to the left of 78) than light from the imaging lens 26 (which focuses to the left of 78, denominated “common” or not) as viewed from the pupil (although the physical separation between focused information display device light and that from the imaging lens (read: image) is not set out in Wallace).

With regard to claims 8, 9, 17, and 18, Applicant’s argument that Swift fails to suggest the use of a reflective-type hologram and, further, that it simply reinforces the teachings of Wallace as to the use of transmission-type holograms, is noted. Applicant is apprised, however, that the Swift reference was relied upon solely for its teaching of both a viewing system of the reverse Galileo type

Group Art Unit: 2872

and a relay lens. Moreover, the transfective nature of the hologram combiner (72) of Wallace has been addressed above in the rejection of claims 1 and 10, thereby rendering irrelevant Swift's teaching or non-teaching of a transmission vs. a reflection hologram, or vice versa.

Allowable Subject Matter

6. **Claims 2-7, and 11-16 are allowed.**

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

7. The claims are allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, **with regard to claims 2-6, and 11-15, a viewing optical system comprising, inter alia, a pentagonal prism for inverting the image, said pentagonal prism having a plurality of surfaces, said hologram combiner being disposed on one of said plurality of surfaces; with regard to claims 7 and 16, a viewing optical system comprising, inter alia, an inverting system comprising a first prism and a second prism arranged with a small space therebetween, the small space forming a TIR surface, the hologram combiner being disposed on a second prism side of said TIR surface, as set forth in the claimed combination.**

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Group Art Unit: 2872

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Group Art Unit: 2872

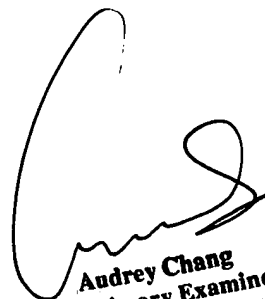
Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (571) 272-2311. The examiner can normally be reached on Monday-Friday, 9:00 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn, can be reached at (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.H.C.
Craig H. Curtis
Group Art Unit
28 September 2004



Audrey Chang
Primary Examiner
Technology Center 2800